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REMARKS

Pending Claims

Claim 2 has been amended in order to expedite the prosecution of this application. In particular, the phrase "substituted or unsubstituted" has been deleted. In addition, claims 4, 11, 30, and 31 have been cancelled without prejudice to filing the subject matter of these claims in one or more continuation applications. No new matter has been added. Thus, claims 1-3, 4-10, 12-27 and 29 are pending.

Specification

On page 2 of the Office Action, the Examiner states that incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper, and that Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. In particular, the Examiner states that the attempt to incorporate essential subject matter on page 21, lines 18-22 in the present application by various foreign references is improper because claim 31 describes the method comprising subjecting the plate to a solvent capable of removing portions of the imaged layers defining the pattern, which the Examiner views as the essential step in the claimed invention.

In response, Applicant has amended the portion of the present specification cited by the Examiner by deleting the incorporation by reference. In addition, claims 30-31 have been cancelled, without prejudice to filing the subject matter of these claims in one or more continuation applications.

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Rejection under 35 U.S.C. § 112, First Paragraph

Incorporation by Reference

On page 3 of the Office Action, the Examiner repeats the previous comments concerning the incorporation by reference of foreign references on page 21, lines 18-21 of the present specification. As discussed above, Applicant has amended the portion of the present specification cited by the Examiner by deleting the incorporation by reference. In addition, claims 30-31 have been cancelled, without prejudice to filing the subject matter of these claims in one or more continuation applications. Therefore, Applicant respectfully requests that this rejection be withdrawn.

Claims 1-27 and 29-31

The Examiner has rejected the above-identified claims under 35 U.S.C. § 112, first paragraph, stating that the specification, while being enabling for a carbon black having a $\text{H}_2\text{NC}_6\text{H}_4\text{CO}_2(\text{CH}(\text{CH}_3)\text{CH}_2\text{O})_x\text{C}_4\text{H}_9$ polymer and a $\text{C}_6\text{H}_4\text{SO}_3^-$ group does not reasonably provide enablement for various pigment having attached a) at least any steric group and b) at least any organic ionic group and at least any amphiphilic counterion to any person skilled in the art to which it pertains, or with which it is most nearly connected. In particular, the Examiner states that Applicant's specification has shown only one prepared example for the final carbon black product having a $\text{H}_2\text{NC}_6\text{H}_4\text{CO}_2(\text{CH}(\text{CH}_3)\text{CH}_2\text{O})_x\text{C}_4\text{H}_9$ polymer and a $\text{C}_6\text{H}_4\text{SO}_3^-$ group product, which can not be the representative for various pigment having attached a) at least any steric group and b) at least any organic ionic group and at least any amphiphilic counterion. The Examiner further states that there is uncertainty about how to form various pigments having these attached groups due to a lack of examples to describe the formation of various pigment products, and the specification is devoid of any synthetic procedures or directional guidance that would place said various pigments having these attached groups in possession of the public in view of an ultimate patent grant. The Examiner concludes that, undoubtedly, more than routine

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experimentation would be involved to synthesize the various pigments attached to any steric group and at least any organic ionic group and at least any amphiphilic group.

The Examiner has also rejected the above-identified claims under 35 U.S.C. § 112, first paragraph, stating that, while the present claims read on the use of any steric group and at least any organic ionic group and at least any amphiphilic counterion in the process of making the final product, the specification shows only that the organic ionic group can be selected from the group of $C_6H_4CO_2$, $C_6H_4SO_3$, $C_{10}H_6CO_2$, $C_{10}H_6SO_3$, $C_2H_4SO_3$, etc., the steric group is described only in the formulas $-X-Sp-[Nion]pR$, $-X-Sp-[(CH_2-O)]pR$, $-X-Sp-[A]pR$, and $-X-Sp-[polymer]R$, and the amphiphilic ion can be selected from the group of cationic amphiphilic ions, anionic amphiphilic ions, and etc. The Examiner therefore concludes that the specification falls short because data essential to how all starting materials, any steric group and at least any organic ionic group and any amphiphilic counterion would be led to form the desired final product.

Applicant respectfully disagrees. While, in the Examples, the present application describes the preparation of pigment products having a specific class of steric groups (based on attachment using different $H_2NC_6H_4CO_2(CH(CH_3)CH_2O)_x C_4H_9$ polymers prepared in Examples 1 and 5) and organic ionic groups with amphiphilic counterions (based on an attached $C_6H_4SO_3^-$ group and several different types of amine-functionalized compounds – see Examples 3, 4, and 6), these are only exemplary of the present invention (see page 27, lines 29-30 and [age 30, lines 27-30).

Furthermore, contrary to the Examiner's comments, the present application does provide ample "directional guidance" to enable one skilled in the art to prepare the pigment products using any pigment and having any attached steric group and any attached organic ionic group having any amphiphilic counterion. For example, the present application clearly states that a wide variety of pigments may be used (see page 13, line 11 to page 14, line 29). For these pigments, a wide variety of steric groups may be attached, and these are described in detail in the present specification (see page 5, line 27 to page 9, line 19). For the organic ionic group, a

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wide variety of both anionic and cationic groups are described in detail (see page 9, line 20 to page 11, line 6), and, for the amphiphilic counterion, a general description along with various specific examples are also included (see page 11, line 7 to page 13, line 10). Therefore, Applicant believes there is clear disclosure of the types of pigments and groups to enable the present invention.

Furthermore, contrary to the Examiner's comments, the present specification does describe detailed data essential to how all starting materials would lead to form the desired final product. In particular, the present application clearly describes methods to attach each of these groups to the various disclosed pigments. For example, methods to attach the steric groups are clearly described (see page 15, line 24 to page 16, line 32), and the specific examples identified above provide a detailed description of how to attach specific steric groups. In addition, methods to form a pigment product having an attached organic ionic group with an amphiphilic counterion are also clearly described (see page 16, line 33 to page 17, line 20), and the examples identified above include specific details relative to specific groups to be attached.

Therefore, contrary to the Examiner's statements, the present application is not devoid of synthetic procedures or directional guidance that would enable one skilled in the art to prepare the disclosed pigment products and does provide data essential for how all starting materials can be used. Furthermore, based on the detailed disclosure provided in the present specification, Applicant believes there would be no uncertainty about how to form various pigments comprising any pigment having attached any steric group and any organic ionic group having any amphiphilic counterion. There is ample detailed disclosure to enable one skilled in the art to prepare such materials, along with specific examples to further exemplify the invention, and neither undue experimentation nor an excessive quantity of experimentation would be required.

Since Applicant believes that the present specification provides ample detailed description to enable the breadth present invention as claimed, Applicant respectfully request that the rejection of claims 1-27 and 29-31 under 35 U.S.C. § 112, first paragraph be withdrawn.

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Rejection under 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claims 2, 4, and 11 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In paragraph 2 of the Office Action, the Examiner states that the phrases "a substituted or unsubstituted arylene group" is recited and that, in the absence of the specific moieties intended to effectuate modification by "substitution" or attachment to the chemical core claimed, the term "substituted" renders the claim in which it appears indefinite in all occurrences wherein Applicant fails to articulate by chemical name, structural formula, or sufficiently distinct functional language the particular moieties Applicant regards as those which will facilitate substitution, requisite to identifying the composition of matter claimed. In addition, regarding claims 4 and 11, the Examiner states that the phrase "a functional group" is recited, which the Examiner views as vague and indefinite because there are numerous functional groups present in organic chemistry that would work for the claimed compounds and that would not work for all of them. The Examiner suggests that, in order to clarify the functional groups to be used in the claimed products, a definite list of the functional groups is necessary.

Regarding claim 2, while Applicant believes that the terms "substituted" and "unsubstituted" relating to various arylene or alkylene type groups is commonly used and would be clear and well-understood in the art, since the terms "arylene group" and "alkylene group" recited in this claim would be understood by one skilled in the art to include both substituted as well as unsubstituted groups, in order to advance the prosecution of this application, Applicant has amended claims 2 by deleting the phrase "substituted or unsubstituted". Applicant therefore respectfully requests that this rejection be withdrawn.

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Regarding claims 4 and 11, while Applicant believes the term "functional group" would be clear and readily understood by one skilled in the art, particularly in light of the present disclosure in which this term is defined and exemplified by a long list of possible groups (see page 6, lines 24-26 and page 6, line 29 to page 7, line 7), in order to advance the prosecution of the present application, claims 4 and 11 have been cancelled without prejudice to filing the subject matter of these claims in one or more continuation applications, making the rejection of these claims moot.

Applicant therefore believes that claims 2, 4, and 11 are not indefinite and respectfully request that the rejection of these claims be withdrawn.

Rejection under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1, 21-22, and 24-27 as being unpatentable over Belmont et al. (U.S. Patent No. 5,571,311).

In paragraph 3 of the Office Action, the Examiner states that Belmont et al. teaches a pigment such as carbon black having attached at least one organic group substituted with an ionic or an ionizable functional group having at least an amphiphilic group, such as a quaternary ammonium or phosphonium group. The Examiner further states that the organic group attached to the carbon black can be at least one aromatic group substituted with one branched C1-C12 alkyl group. The Examiner notes that various applications are described, including inkjet inks.

The Examiner also states that the present invention differs from Belmont et al. in that the claimed steric group is unspecified. However, concerning this lack of a described steric group, the Examiner states that Belmont et al. describes that the organic group can be at least one aromatic group substituted with one branched C1-C12 alkyl group. The Examiner infers from this that the bulky group such as the aromatic group can be used as either the organic group or the steric group depending on the choice of the skilled artisan. The Examiner therefore concludes that, if the skilled artisan had desired to formulate the pigment product containing the steric group attached to the pigment, it would have been obvious to the skilled artisan to be

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motivated to use the substituted aromatic compound of Belmont et al. as the organic group having the steric group in the Belmont et al. modified carbon black.

Applicant respectfully disagrees. Regarding claim 1 of the present invention, this claim recites a pigment product comprising a pigment having attached a) at least one steric group and b) at least one organic ionic group with at least one amphiphilic counterion. The counterion has a charge opposite to that of the organic ionic group. Thus, there are two different types of attached groups for the pigment product of the present invention.

By comparison, Belmont et al. relates to aqueous inkjet ink compositions comprising a carbon black product having attached at least one organic group, wherein the organic group comprises at least one ionic group, at least one ionizable group, or a mixture thereof. Two types of groups comprising ionic and/or ionizable groups are disclosed, one comprising an aromatic group and one comprising a C1-C12 alkyl group. The aromatic or alkyl groups are directly attached to the pigment (see column 5, lines 24-26 as well as the abstract and claims 1, 19, 22, and 24). However, whether the organic group comprises a C1-C12 alkyl group or an aromatic group directly attached to the pigment, the organic group of Belmont et al. must comprise an ionic and/or ionizable group.

Thus, Belmont et al. describes a carbon black product having one type of attached organic group. This would be similar to the "organic ionic group" recited in claim 1. However, there is no disclosure, teaching or suggestion in Belmont et al. that such an organic ionic group can or should be used in combination with a second, different type of group and, in particular, a steric group. As described in the present application, a steric group is one having "the ability to be steric or promoting steric hindrance" (see page 5, lines 27-28), and various specific preferred chemical structures are disclosed throughout the specification to further exemplify groups having this "steric" property. None of these groups, or any other types of steric groups, are shown in Belmont et al.

Furthermore, while organic groups having ionic and/or ionizable groups are described in Belmont et al., there is no disclosure, teaching or suggestion of an ionic group having an amphiphilic group, as recited in present claim 1. As described in the present application, the

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term "amphiphilic group" refers to a group "having a hydrophilic polar 'head' and a hydrophobic organic 'tail'" (see page 11, lines 7-8). The counterion may be "cationic or anionic in nature" (see page 11, lines 8-9), and a large number of specific structures are shown in order to exemplify groups having this "amphiphilic" property (see page 11, line 7 to page 13, line 10). Amphiphilic counterions are not described in Belmont et al. Applicant notes that the section of Belmont et al. cited by the Examiner (column 5, lines 59-60) does not relate to a carbon black having attached at least one organic group substituted with an ionic or ionizable function group having at least one amphiphile, such as a quaternary ammonium or quaternary phosphonium group, as stated by the Examiner. Rather, this refers to an embodiment of Belmont et al. in which the organic group comprises a cationic group. This is not an amphiphilic counterion.

Therefore, Applicant believes that claim 1 is patentable over Belmont et al. since this reference does not disclose, teach, or suggest either an organic ionic group having an amphiphilic counterion or the use of two different types of attached organic groups, especially a steric group.

Regarding claim 21, this claim recites an ink composition comprising at least one pigment product of claim 1. Since, as discussed above, Applicant believes Belmont et al. does not disclose, teach, or suggest the pigment product of claim 1, Applicant further believes that there is no disclosure, teaching, or suggestion of an ink composition comprising such a pigment product.

Therefore, Applicant believes that claim 21 is also patentable over Belmont et al. Furthermore, claims 22 and 24-27, which depend directly from claim 21, recite further embodiments of the present invention and, for at least the reasons discussed above, are also patentable over this reference.

Applicant therefore believes that claims 1, 21-22, and 24-27 are patentable over Belmont et al. and respectfully requests that this rejection be withdrawn.

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In view of the foregoing remarks, Applicant believes that this application is in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would further expedite the prosecution of the subject application, the Examiner is invited to call the undersigned.

Respectfully submitted,

By:



Dr. Robert M. Amici
Reg No. 52,554
CABOT CORPORATION
Law Department
157 Concord Road
Billerica, MA 01821-7001
(978)-670-6191

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